Project	**IEEE 802.20 Working Group on Mobile Broadband Wireless Access** <**http://grouper.ieee.org/groups/802/20/**>
Title	**Selected topics on Mobile System Requirements and Evaluation Criteria**
Date Submitted	**2003-05-05**
Source(s)	Marianna Goldhammer Tel Aviv, HaBarzel 21 Israel Voice: +972 3 645 6241 Fax: Email: marianna.goldhammer@alvarion.com
Re:	MBWA Call for Contributions 802.20-03/09
Abstract	
Purpose	
Notice	This document has been prepared to assist the IEEE 802.20 Working Group. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.20.
Patent Policy	The contributor is familiar with IEEE patent policy, as outlined in Section 6.3 of the IEEE-SA Standards Board Operations Manual <http://standards.ieee.org/guides/opman/sect6.html#6.3> and in *Understanding Patent Issues During IEEE Standards Development* <http://standards.ieee.org/board/pat/guide.html >.

Selected topics – Mobile System Requirements and Evaluation Criteria

Marianna Goldhammer, Alvarion

Introduction

The scope of this contribution is to bring into attention topics that have special importance in defining the mobile system and its performance.

Requirements

1. The PHY and MAC protocols shall support IP both real-time and non-real-time services, and the associated QoS, according to IETF recommendations.
2. The PHY and MAC protocols shall support both Ipv4 and Ipv6.
3. The PHY and MAC protocols performance shall be maximized to support:
    a. IP Voice
    b. Video conference
    c. Multi-media streaming, both down-link and up-link
    d. Inter-active services
    e. Non real-time services
4. The PHY and MAC protocols shall be optimized for statistical traffic multiplexing, in both up-link and down-link
5. For efficient transport of IP voice/video, the MAC protocol shall allow for header compression.
6. The MAC protocols shall support IP multicasting.
7. The PHY and MAC protocols shall optimally transmit variable length IP packets.
8. The PHY and MAC protocols shall permit peak down-link / up-link data rate delivery to / from any subscriber terminal.
9. The PHY and MAC protocols shall provide for multi-rate support.
10. The same PHY protocol shall support both FDD and TDD.
11. The same PHY protocol shall optimally support Advanced Antenna techniques, in both FDD and TDD.
12. The channel spacing shall be 1.25MHz and 5MHz.
13. The PHY and MAC protocols shall allow, when operating in FDD mode, the half-duplex subscriber terminal operation.
14. The MAC protocol shall allow for error correction through retransmission.
15. Repeater function shall be supported; the Repeated function shall be transparent to MAC protocols.
16. Inter-working functions shall be specified with the upper IP layers.

Capacity performance evaluation criteria

In order to evaluate the different proposals capacity performance, it is useful to define evaluation scenarios, having as common parameters, as:

- Channel spacing;
- Modem rate (max, medium, minimum);
- Coding rate (max, medium, minimum);
- MAC frame duration.

For capacity evaluation, the payloads associated with every type service shall be specified, for example:

- 30 bytes for G.729 codec, 30ms and 1...2 bytes for header compression;
- 1514 bytes for long IP packets;
- 64 bytes for short IPv4 packets;
- T.B.C. bytes for video-conference, 64kb/s (specify the average);
- T.B.C. bytes for video-conference, 384kb/s;
- T.B.C. bytes for inter-active gaming.

In order to simplify the procedure, only one type of traffic should be assumed for all the Base Station subscribers. For every type of traffic shall be calculated the subscriber number, taking into account both up-link/down-link limitations.

Delay evaluation criteria

The delay is an important factor for real-time services.
The system delay shall be evaluated according to the same procedure, as specified for capacity evaluation. For real-time services, is important to take into account the transmission time, as function of:

- Channel spacing;
- Modem rate (max, medium, minimum);
- Coding rate (max, medium, minimum);
- MAC frame duration;
- Payload transmission time;
- Etc.

Conclusions

The topics addressed by this document are only a small part of the mobile system requirements.
Will be beneficial if two Task Groups will be created to produce the:

- “System Requirements” document
- “Evaluation criteria” document.

Without these documents, we might be in the situation that the proposals will miss important aspects, and as result, the standard quality will be compromised.